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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,718	12/04/2003	Igor Bragin	LMPY-18910 [345/U]	6893
28584	7590	12/02/2005	EXAMINER	
STALLMAN & POLLOCK LLP SUITE 2200 353 SACRAMENTO STREET SAN FRANCISCO, CA 94111			VAN ROY, TOD THOMAS	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

4.8

Office Action Summary	Application No. 10/727,718	Applicant(s) BRAGIN ET AL.	
	Examiner Tod T. Van Roy <i>[Signature]</i>	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/04/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

Claim 12 is objected to because of the following informalities:

It is believed that claim 12 should more properly depend from claim 11, and has been examined as such.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-6, 25-26, and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Cirkel et al. (US 5142547).

With respect to claim 1, Cirkel discloses an electrode structure for a gas discharge laser comprising: an electrode body capable of functioning as one of an anode and a cathode (fig.9 E1) in order to energize a gas mixture in the discharge chamber, the electrode body including a shoulder portion (fig.9 E1 right and left sides next to center protrusion), a ceramic spoiler (fig.9 #10) coupled with the shoulder portion of said electrode body in order to prevent arcing between the shoulder portion and a component of the discharge chamber (col.8 lines 14-20).

With respect to claim 3, Cirkel discloses the electrode body further includes a nose portion (fig.9 E1 protrusion) for energizing the gas mixture (col.8-9 lines 64-7), the shoulder portion being positioned on either side of the nose portion.

With respect to claim 4, Cirkel discloses the nose portion of the electrode body has a length that provides for a proper discharge while limiting the effect on a flow of the gas mixture in the discharge chamber (proper discharge is inherently present or the device would not operate, shape of the electrode is smooth facilitating clean path for the gas to flow over).

With respect to claim 5, Cirkel discloses a portion of the ceramic spoiler exposed to the gas mixture has a substantially smooth finish (interior sides near electrodes, #9, has a flat surface which would facilitate gas flow), in order to minimize turbulence in the gas mixture.

With respect to claim 6, Cirkel discloses at least a portion of the ceramic spoiler exposed to the gas mixture is shaped to tangentially follow a flow of gas mixture through the discharge chamber (interior sides near electrodes, #9, has a flat surface which would facilitate gas flow).

With respect to claim 25, Cirkel discloses an electrode structure for a gas discharge laser comprising: a conductive structure (fig.9 E1) having first and second surface regions (fig.9 E1, right and left sides of the protrusion), the first region capable of imparting electrical energy to a gas mixture in the laser discharge chamber in order to generate a laser pulse (fig.9 E1, protrusion), and an insulating member coupled to the second surface region of the conductive structure (fig.9 #10) in order to prevent arcing

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between the second surface region and a component of the discharge chamber (col.8 lines 14-20).

With respect to claim 26, Cirkel discloses the insulating member coupled to the second surface region of the conductive structure is a ceramic spoiler (col.8 line 12).

With respect to claim 30, Cirkel discloses a method for preventing arcing in a laser system comprising: applying an electrical pulse to a pair of electrodes in a discharge chamber in order to energize a gas mixture in the chamber and generate a laser pulse (col.8-9 lines 64-7), coupling an insulating member to a first electrode of the pair of electrodes (fig.9 E1) in order to prevent arcing between the pair of electrodes in the gas mixture after the generation of the laser pulse (col.8 lines 14-20).

With respect to claim 31, Cirkel discloses applying an electrical pulse to pre-ionization pins in the discharge chamber in order to pre-ionize the gas mixture (col.8-9 lines 64-7), the insulating member being further capable of preventing arcing between the pre-ionization pins and the first electrode (col.8 lines 14-20).

With respect to claim 32, Cirkel discloses coupling an insulating member to a second electrode of the pair of electrodes (fig.9 #10 also connected to E2).

Claims 11-12 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Lacour et al. (US 4495631).

With respect to claims 11-12, Lacour discloses an excimer laser system (col.5 lines 29-31) comprising: a resonator (col.2 lines 47-48) including therein a discharge chamber filled with a gas mixture (col.3 lines 1-4), the discharge chamber including at

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least one window at an end of the discharge chamber for sealing the discharge chamber and for transmitting a laser pulse (col.2 lines 48-52), and a pair of discharge electrodes in the discharge chamber (col.2 lines 41-46) connected to a discharge circuit (fig.1) for energizing the gas mixture and generating the laser pulse, each discharge electrode including a conductive structure having a first surface region that is exposed to the gas mixture (fig.1 raised surfaces of #2, 3) in order to impart electrical energy to the gas mixture and generate a laser pulse, and a second reference surface region having an insulating member coupled thereto (fig.1 left and right sides of raised surface, insulating members #4, 5, ceramic – col.2 lines 32-35) in order to prevent arcing between the second surface region and a component of the discharge chamber (inherent in that the device of Lacour has the same properties as that of the claimed invention, thus would perform the same function).

With respect to claim 16, Lacour discloses said first surface region includes a protruding nose portion capable of maintaining an appropriate gap distance between the pair of electrodes (col.2 lines 41-46, col.3 lines 14-19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 7, 10, 27-28, and 33-34, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cirkel in view of Miiller-Horsche (US 5247534).

With respect to claims 2 and 27, Cirkel teaches the electrode structure as outlined in the rejection to claims 1 and 25, but does not teach the ceramic spoiler to include a tongue portion capable of being received by a channel in the electrode body. Miiller-Horsche teaches a gas laser wherein the electrode body (fig.1 #10a + 24) has a channel for accepting a tongue portion of an insulating member (fig.1 #16). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ceramic insulator and electrode body of Cirkel with the a tongue/channel fitting for the electrode insulator connection of Miiller-Horsche, as this type of fastening is well known to provide mechanically stable results (also stated as being well known on page 7 line 17 of the applicant's specification).

With respect to claims 7, 10, 28, and 33, Cirkel teaches the electrode structure and method as outlined in the rejection to claims 1, 25, and 30, but does not teach a mounting structure to be positioned in the channel of the electrode body capable of flexibly holding the tongue portion of the spoiler. Miiller-Horsche teaches a mounting

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structure (constituted by the walls of the channel in the electrode body, and reinforced by the pressure cover #26, and the capacitors #22, flexible in that the holder is stable for various pressures – col.4 lines 62-68) for holding the tongue portion of the insulator. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ceramic spoiler and electrode body of Cirkel with the mounting structure of Miiller-Horsche in order to provide support for the insulator under the high pressure conditions in the chamber (Miiller-Horsche, col.4 lines 62-68).

With respect to claim 34, Cirkel teaches the method as outlined in the rejection to claim 30, but does not teach the use of a blower to circulate the gas. Miiller-Horsche teaches a gas laser wherein a blower (col.4 lines 35-48) circulates the gas mixture. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Cirkel with the blower of Miiller-Horsche in order to flush the chamber and cycle in fresh laser gas (Miiller-Horsche, col.4 lines 42-48), aiding in removing excess heat from the system.

Claims 13-14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lacour in view of Miiller-Horsche.

With respect to claim 13, Lacour teaches the laser system as outlined in the rejection to claim 11, but does not teach the ceramic spoiler to include a tongue portion capable of being received by a channel in the electrode body. Miiller-Horsche teaches a gas laser wherein the electrode body (fig.1 #10a + 24) has a channel for accepting a tongue portion of an insulating member (fig.1 #16). It would have been obvious to one of

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ordinary skill in the art at the time of the invention to combine the ceramic insulator and electrode body of Lacour with the a tongue/channel fitting for the electrode insulator connection of Miiller-Horsche, as this type of fastening is well known to provide mechanically stable results (also stated as being well known on page 7 line 17 of the applicant's specification).

With respect to claim 14, Lacour teaches the laser system as outlined in the rejection to claim 11, but does not teach a mounting structure to be positioned in the channel of the electrode body capable of flexibly holding the tongue portion of the spoiler. Miiller-Horsche teaches a mounting structure (constituted by the walls of the channel in the electrode body, and reinforced by the pressure cover #26, and the capacitors #22, flexible in that the holder is stable for various pressures – col.4 lines 62-68) for holding the tongue portion of the insulator. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ceramic spoiler and electrode body of Lacour with the mounting structure of Miiller-Horsche in order to provide support for the insulator under the high pressure conditions in the chamber (Miiller-Horsche, col.4 lines 62-68).

With respect to claim 17, Lacour teaches the laser system as outlined in the rejection to claim 11, but does not teach the use of a blower to circulate the gas. Miiller-Horsche teaches a gas laser wherein a blower (col.4 lines 35-48) circulates the gas mixture. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Lacour with the blower of Miiller-Horsche in order to

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flush the chamber and cycle in fresh laser gas (Miiller-Horsche, col.4 lines 42-48), aiding in removing excess heat from the system.

Claims 8, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cirkel and Miiller-Horsche in view of Fein et al. (US 4122411).

With respect to claims 8 and 29, Cirkel and Miiller-Horsche teach the electrode structure as outlined in the rejection to claims 7 and 28, but do not teach the use of a clip in the tongue and channel connection. Fein teaches a gas laser wherein a clip mount is used to attach a ceramic to an electrode (fig.12, col.16 lines 21-37, 44-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the mounting structure of Cirkel and Miiller-Horsche with the clip mount of Fein in order to stabilize the insulator in the proper position (Fein, col.16 lines 44-48).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cirkel in view of Miiller-Horsche and further in view of Malburg et al. (US 4257012).

With respect to claim 9, Cirkel and Miiller-Horsche teach the electrode structure as outlined in the rejection to claim 7, but do not teach the mounting structure to be made of a Copper-Beryllium alloy and to be covered by nickel. Malburg teaches an assembly for a gas laser wherein a Copper-Beryllium alloy and nickel plating is used (col.3 line 18, col.4 line 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the electrode structure of Cirkel and Miiller-Horsche with the Copper-Beryllium alloy of Malburg in order to use a material with good

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heat conducting and strength properties (Malburg, col.3 lines 15-18), and plate with nickel in order to prevent corrosion (col.3-4 lines 65-3).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lacour in view of Kojima (US 2002/0001329).

With respect to claim 15, Lacour teaches the laser system as outlined in the rejection to claim 11, but does not teach the use of a pre-ionization unit including pre-ionization pins. Kojima teaches a gas laser device wherein a pre-ionization unit including pre-ionization pins (fig.2 17a, 17b) is used. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser system of Lacour with the pre-ionization of Kojima in order to supply electrons to the main discharge electrodes prior to a main discharge ([0034-35]).

Claims 18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lacour in view of Miiller-Horsche and further in view of Hofmann et al. (US RE38054 E).

With respect to claims 18 and 24, Lacour and Miiller-Horsche teach the laser system as outlined in the rejection to claim 17, but do not teach the blower to have bearings. Hofmann teaches a gas laser having at least two bearings (col.8 lines 59-67) and the use of ceramic bearings (col.8 lines 50-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser system and blower of Lacour and Miiller-Horsche with the bearings of Hofmann in order to provide

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as little friction as possible inside of the fan to reduce the amount of needed maintenance and heat produced (col.8 lines 53-57).

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lacour, Miiller-Horsche, Hofmann, and further in view of Barden (The Barden Corporation, "Precision Bulletin", 02/21/2000).

With respect to claims 19-20, Lacour, Miiller-Horsche, and Hofmann teach the laser system as outlined in the rejection to claim 18, but do not teach the use of a high nitrogen-alloyed martensitic steel for the bearings. Barden teaches the use of Cronidur, a high nitrogen-alloyed martensitic steel used in bearings (col.1). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system and bearing of Lacour, Miiller-Horsche, and Hofmann with the material of Barden in order to increase the lifetime of the bearings (Barden, col.1 para.2).

Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lacour, Miiller-Horsche, Hofmann, and further in view of Andronica (US 5957017).

With respect to claims 21-23, Lacour, Miiller-Horsche, and Hofmann teach the laser system as outlined in the rejection to claim 18, but do not teach the use of a dry film lubricant of tungsten disulfide. Andronica teaches the use of Dicronite, a dry film lubricant of tungsten disulfide (col.2 line 35). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser system of

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Lacour, Miiller-Horsche, and Hofmann with the Dicronite of Andronica in order to provide additional lubrication to the bearings (Andronica, col.2 lines 33-36).

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cirkel in view of Miiller-Horsche and further in view of Barden.

With respect to claim 35, Cirkel and Miiller-Horsche teach the method as outlined in the rejection to claim 34, but do not teach the use of a high nitrogen-alloyed martensitic steel for the bearings. Barden teaches the use of Cronidur, a high nitrogen-alloyed martensitic steel used in bearings (col.1). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system and bearing of Cirkel and Miiller-Horsche with the material of Barden in order to increase the lifetime of the bearings (Barden, col.1 para.2).

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cirkel in view of Miiller-Horsche and Barden, and further in view of Androncia.

With respect to claim 36, Cirkel, Miiller-Horsche, and Barden teach the method as outlined in the rejection to claim 35, but do not teach the use of a dry film lubricant of tungsten disulfide. Andronica teaches the use of Dicronite, a dry film lubricant of tungsten disulfide (col.2 line 35). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser system of Cirkel, Miiller-Horsche, and Barden with the Dicronite of Andronica in order to provide additional lubrication to the bearings (Andronica, col.2 lines 33-36).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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